

REMARKS

In response to the Office Action dated February 22, 2007, all objections and rejections are respectfully traversed.

Claims 6, 7, 12-50, and 52-79 are in the case.

Claim 51 was cancelled.

Claims 59-79 were added.

Claims 6, 12, 15, 19, 21, 27, 30-36, 41, 42, 50 and 58 were amended to better claim the invention.

Claims 6-7, 19-20, 35 and 41 were allowed by Examiner.

Nonstatutory Obviousness-Type Double Patenting

In response to the Examiner's obviousness type double patenting rejection over U.S. Patent Application Serial No. 10/705,025 and 10/705,470, the appropriate Terminal Disclaimers signed by an attorney of record is filed herewith.

Rejections Under 35 U.S.C. § 112

At paragraph 4 of the Office Action, Examiner rejected claims 6, 7, 21-26 and 30-58 under 35 U.S.C. 112, second paragraph as being indefinite for use of the phrase, "to be written". Amendment of the claims is believed to satisfy these rejections.

Rejections Under 35 U.S.C. § 101

At paragraph 5 of the Office Action, claims 6, 7, 12-42, 44-50 and 52-58 were rejected under 35 U.S.C. § 101 because “[t]here are no hardware or devices in the body of the claims.”

Applicant’s claimed novel invention, as set forth in representative claim 6, comprises in part:

6. A *computer* implemented method for managing data directed to a *file served by a storage system* while the file is undergoing a write allocation procedure, the method comprising:
 - receiving a write operation comprising data directed to the file;
 - associating the received data with a *buffer data control structure* associated with the file;
 - marking the buffer data control structure associated with the file as being dirty for a next consistency point;
 - associating entries in a flags array of the buffer data control structure with a current consistency point and with a next consistency point; and
 - accessing entries associated with a current consistency point by indexing into the flags array using a value calculated by performing a logical AND operation on a consistency point counter and a value of 1.

Applicant respectfully points out that 35 U.S.C. § 101 as explained in MPEP 2106 sets out:

If a claim defines a useful machine or manufacture by identifying the physical structure of the machine or manufacture in terms of its hardware or *hardware and software combination*, it defines a statutory product.

Accordingly, because Applicant’s claimed invention comprises a *computer* which is a hardware and software combination, it defines a statutory machine and is legally sufficient statutory subject matter under 35 U.S.C. § 101.

Further, Applicant respectfully points out that 35 U.S.C. § 101 as explained in MPEP 2106 sets out:

When a computer program is recited *in conjunction with a physical structure*, such as a computer memory. Office personnel should treat the claim as a product claim. (Emphasis Added).

Applicant respectfully urges that claim 6, satisfies the statutory subject matter requirement under 35 U.S.C. § 101 as the method is implemented on a computer which is a physical structure. Applicant further respectfully urges that claim 6, satisfies the statutory subject matter requirement under 35 U.S.C. § 101 as the buffer data control structure may be stored in computer memory. In one example of the claimed invention, “in memory 124 of storage appliance 100, each data block is represented by a control buffer data structure containing pointers to raw write data received from write operations” (Application specification; page 19, lines 14-15; fig 5). Accordingly, Applicant respectfully urges that that claim 6 defines legally sufficient statutory subject matter.

Examiner also stated “the features upon which applicant relies (i.e., immediate result to client [of decreased latency]) are not recited in the rejected claims.”

Applicant respectfully points out that 35 U.S.C. § 101 as explained in MPEP 2107.02 sets out:

Upon initial examination, the examiner should review the specification to determine if there are any statements asserting that the claimed invention is useful for any particular purpose. (Emphasis added). (See also *In Re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Circ. 1994)(discussing patentable weight of data structure limitations in the context of a statutory claim to a data structure...that increases computer efficiency.)(MPEP 2106.01)

Applicant respectfully urges that it is the specification which must disclose utility and not necessarily the claims themselves. Thus, Applicant respectfully urges the presently claimed invention meets all requirements of the statutes and rules.

Rejections Under 35 U.S.C. § 102

At page 7 of the Office Action, claims 12-58 were rejected under 35 U.S.C. § 102(e) as being unpatentable in view of Koseki et al, U.S. Patent No. 6,732,124 (hereinafter “Koseki”).

Applicant’s claimed novel invention, as set forth in representative claim 15, comprises in part:

15. A storage system adapted to enable write operations to a file undergoing write allocation, the storage system comprising:
a write allocation process of a file system, the write allocation process adapted to associate received file data with a buffer data control structure upon receipt of a write operation directed to the file while the file is undergoing write allocation; and
a consistency point counter used to label modified data as belonging to the current consistency point or to the next consistency point, and capturing data modified for the current consistency point in the current consistency point and not capturing data belonging to the next consistency point.

Koseki discloses a method for “managing the allocation of metadata volume resources on the basis of allocation management data.” The basis for using an “allocation-dirty flag” is to determine whether “one or more allocating operations have been done to the bitmap block.” Simply stated, a “dirty” [state of a bitmap block] implies that information on the memory has been modified, but the modification has not yet been reflected in the disk storage...where as [a] ‘clean’ state of a bitmap block denotes the block has not

experienced any allocation or de-allocation operations.” [col. 19, lines 35 to col. 21, lines 11].

Applicant respectfully urges that Koseki does not show Applicant’s novel *a consistency point counter used to label modified data as belonging to the current consistency point or to the next consistency point, and capturing data modified for the current consistency point in the current consistency point and not capturing data belonging to the next consistency point.*

Applicant’s novel “*consistency point counter* [is capable of labeling] *modified* [(updated)] *data as belonging to the current consistency point or to the next consistency point.*” This allows updates to be recognized and applied to metadata being written during a current consistency point (Application specification; page 21, lines 5-14). Examiner mistakenly equates Applicant’s “dirty” flag, which indicates data is marked for the next consistency point, with the Koseki “dirty” flag, which “denotes the [data] block has not experienced any allocation or de-allocation operations” (col 20, lines 52-58).

Further, Koseki is totally silent regarding the concept of a current or next consistency point. Koseki mentions concurrent transactions, “where the same resource is allocated to two requesters” (col 21, lines 60-65).

Even further, Applicant is able to “[capture] *data modified for the current consistency point in the current consistency point and not capture data belonging to the next consistency point.*”

In Koseki, any modifications made during a transaction will not include updates made to the transaction in progress (col 22, lines 65 to col 23, lines 2).

“Suppose that some concurrent transactions are making so frequent updates to metadata objects that even the largest log buffer is overwhelmed by the produced log records. The logging system is now required to forcefully invoke a log write operation. To keep the file system

consistent even in such a situation, it will be necessary for the logging system to record the state of metadata objects at some midpoint, although that record does not include future updates (if any) to be made by the transaction in progress.” (emphasis added).

Thus, the logging system must be halted during the Koseki log write operation and no updated information will be made to the transaction (allocation or de-allocation) in progress. Further this teaches away from Applicant’s novel invention which can “[capture] **data modified** belonging to a **current consistency point**.” For example, “if [a] file is currently involved in a CP, a reference to the file data associated with the write request is saved in a data buffer and a flag is set in a control buffer data structure identifying that the file [being modified] is ‘dirty’ for the next CP. The file data is then committed to disk during the next CP” (Application summary; page 6).

Applicant respectfully urges that the Koseki publication is legally precluded from anticipating the claimed invention under 35 U.S.C. § 102 because of the absence from the Koseki patent of Applicant’s novel use of *a consistency point counter used to label modified data as belonging to the current consistency point or to the next consistency point, and capturing data modified for the current consistency point in the current consistency point and not capturing data belonging to the next consistency point*.

Similarly, independent claims 12, 19, 27, 30, 36, 42, 50, 58 and dependent claims 13-14, 28-29, 31-34, 37-40, 43-49, 51-57 also include limitations of *a consistency point counter used to label modified data as belonging to the current consistency point or to the next consistency point, OR capturing data modified for the current consistency point in the current consistency point and not capturing data belonging to the next consistency point*. As noted above, Koseki does not teach or disclose the concept of *a consistency point counter used to label modified data as belonging to the current consistency point or to the next consistency point, and capturing data modified for the cur-*

rent consistency point in the current consistency point and not capturing data belonging to the next consistency point. As such, Koseki does not anticipate these claims.

Applicant's claimed novel invention, as set forth in representative claim 17, comprises in part:

21. A method for managing data directed to a file while the file is under-going a write allocation procedure, the method comprising the steps of:

determining if the buffer is dirty for a current consistency point [S13 of fig. 17; col. 20, lines 12 to col.21, lines 2];

performing, in response to determining that the buffer is dirty for the current consistency point, write allocation of a buffer associated with the file for a current consistency point; and

freeing, if the buffer is dirty for a next consistency point, data written during the step of write allocation.

Again, the state of the bit 'Dirty' ["1"] implies that information on the memory has been modified, but the modification has not yet been reflected in the disk storage (col 20, lines 23-25). Conversely, as "opposed to 'Dirty' state, 'Clean' state of a bitmap block denotes the block has not experienced any allocation or de-allocation operations" (col 20, lines 52-58). Neither the "Clean" nor "Dirty" state values hold any indication of a current consistency point or a next consistency point.

Applicant respectfully urges that the Koseki publication is legally precluded from anticipating the claimed invention under 35 U.S.C. § 102 because of the absence from the Koseki patent of Applicant's novel use of *determining if the buffer is dirty for a current consistency point*.

Similarly, dependent claims 22-26 also include limitations of *determining if the buffer is dirty for a current consistency point*. As noted above, Koseki does not teach or disclose the concept of *determining if the buffer is dirty for a current consistency point*. As such, Koseki does not anticipate these claims.

New Claims

New claims 59-79 were added and are believed to be in condition for allowance.

Applicant's claimed novel invention, as set forth in new representative claim 59, comprises in part:

59. A computer implemented method for managing a file system, comprising:
receiving data directed to the file system;
labeling the data as belonging to a current consistency point or to a next consistency point; and
allocating disk space for data belonging to the current consistency point, and not allocating disk space for data belonging to the next consistency point.

Applicant respectfully urges that Koseki does not show Applicant's novel *allocating disk space for data belonging to the current consistency point, and not allocating disk space for data belonging to the next consistency point*.

Applicant respectfully urges that the Koseki publication is legally precluded from anticipating the claimed invention under 35 U.S.C. § 102 because of the absence from the Koseki patent of Applicant's novel use of a *allocating disk space for data belonging to the current consistency point, and not allocating disk space for data belonging to the next consistency point*.

All independent claims are believed to be in condition for allowance.

All dependent claims are believed to be dependent from allowable independent claims, and therefore in condition for allowance.

Favorable action is respectfully solicited.

Should the Examiner feel personal contact is required to discuss this matter further, please do not hesitate to call the undersigned attorney at (617) 951-2500.

Please charge any additional fee occasioned by this paper to our Deposit Account No. 03-1237.

Respectfully submitted,

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